

Claims

1. A heat exchanger plate for a plate package (2) for a plate heat exchanger, wherein the heat exchanger plate (1) extends between a primary edge zone (11a) and a secondary edge zone (12a) in parallel with a central extension plane (13), an upper plate plane (14) and a lower plate plane (15), wherein the central extension plane includes a centre axis (x) dividing the heat exchanger plate (1) in a primary part (11) and a secondary part (12), and wherein the heat exchanger plate includes
 - a first end area (16),
 - a second end area (17),
 - a central heat transfer area (18), which extends between the primary edge zone (11a) and the secondary edge zone (12a) from the first end area (16) to the second end area (17),
 - a primary porthole (21) and a secondary porthole (23), which extend through the heat exchanger plate (1) in the first end area (16) and which are surrounded by a respective adjoining edge area (25), wherein the primary porthole (21) is located on the primary part (11) and the secondary porthole (23) on the secondary part (12), and
 - a distribution area (26) which extends on the first end area (16) and has a base surface (27) extending from the primary porthole (21) to the central heat transfer area (18),
- 25 characterised in that the base area (27) is located at an upper level in the proximity of the upper plate plane (14) in the proximity of the edge area (25) of the primary porthole (21) and sinks successively to a lower level in the proximity of the lower plate plane (15) in the proximity of the secondary edge zone (12a).
- 30 characterised in that the shape of the distribution area (26) has been produced through compression-moulding of the heat exchanger plate (1).

3. A heat exchanger plate according to any one of claims 1 and 2, characterised in that the base surface (27) sinks successively along a border to the central heat transfer area (18) from in the proximity of the primary edge zone (11a) to in 5 the proximity of the secondary edge zone (12a).
4. A heat exchanger plate according to any one of claims 1 to 10 3, characterised in that the base surface (27) sinks continuously from the upper level to the lower level.
5. A heat exchanger plate according to any one of the preceding claims, characterised in that the distribution area (26) and the base surface (27) extend over substantially the whole first end area (16). 15
6. A heat exchanger plate according to any one of the preceding claims, characterised in that the distribution area (26) includes a number of projections (31) and depressions (32), wherein substantially each projection (31) extends in a respective direction running from the primary porthole (21) towards the central heat transfer area (18). 20
7. A heat exchanger plate according to claim 6, characterised in that substantially each projection (31) reaches the upper plate plane (14) and that substantially each depression (32) reaches the lower plate plane (15). 25
8. A heat exchanger plate according to any one of claims 6 and 7, characterised in that substantially each projection (31) has a length which is substantially shorter than the distance 30 from the primary porthole (21) to the central heat transfer area (18) along the direction of the projection (31).
9. A heat exchanger plate according to any one of claims 7 and 8, characterised in that substantially each depression (32) 35

extends substantially perpendicularly to said respective direction of an adjacent projection (31).

10. A heat exchanger plate according to any one of claims 6 to
5 9, characterised in that substantially each depression (32) extends in a respective direction running from the secondary porthole (23) towards the central heat transfer area (18).

11. A heat exchanger plate according to any one of claims 9
10 and 10, characterised in that substantially each depression (32) has a length which is substantially shorter than the distance from the secondary porthole (23) to the central heat transfer area (18) along the direction of the depression (32).

15 12. A heat changer plate according to any one of claims 6 to 11,
characterised in that each projection (31) and each depression (32) have two ends and two long sides, wherein substantially each projection (31), which is located on the secondary part (12), with one of the ends extends to one of the long sides of a depression (32) and wherein substantially each depression (32), which is located on the primary part (11), with one the ends extends to one of the long sides of a projection (31).

20 25 13. A heat exchanger plate according to any one of claims 6 to 12, characterised in that the heat exchanger plate (1) is symmetrical with regard to the centre axis (x) in such a way that substantially each depression (32) has a shape and a position corresponding to the shape and the position of a projection (31) on the other side of the centre axis (x), wherein each depression (32) is designed to abut a projection (31) of an adjacent turned heat exchanger plate (1) in the plate package (2).

30 35 14. A plate package for a plate heat exchanger including at least two heat exchangers plates (1) with a plate interspace (40) therebetween, wherein each heat exchanger plate (1) extends between a primary edge zone (11a) and a secondary edge zone

- (12a) in parallel with a central extension plane (13), an upper plate plane (14) and a lower plate plane (15), wherein the central extension plane (13) includes a centre axis (x) dividing the heat exchanger plate (1) in a primary part (11) and a secondary part (12), and wherein the heat exchanger plate includes
- a first end area (16),
 - a second end area (17),
 - a central heat transfer area (18), which extends between
- 10 the primary edge zone (11a) and the secondary edge zone (12a) from the first end area (16) to the second end area (17),
 - a primary porthole (21) and a secondary porthole (23), which extend through the heat exchanger plate (1) in the first end area (16) and which are surrounded by a respective

15 adjoining edge area (25), wherein the primary porthole (21) is located on the primary part (11) and the secondary porthole (23) on the secondary part (12), and
 - a distribution area (26) which extends on the first end area (16) and has a base surface (27) extending from the primary porthole (21) to the central heat transfer area (18),
 - characterised in that the base area (27) is located at an upper level in the proximity of the upper plate plane (14) in the proximity of the edge area (25) of the primary porthole (21) and sinks successively to a lower level in the proximity of the lower plate plane (15) in the proximity of the secondary edge zone (12a).

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15. A plate package according to claim 14, characterised in that the heat exchanger plates (1) are arranged in alternating order.

30 in such a way that the primary part (11) in the first end area (16) of a first heat exchanger plate (1) adjoins the secondary part of an adjacent second heat exchanger plate (1), wherein the height of the plate interspace (40) decreases successively from in the proximity of the edge area (25) of the primary porthole (21) with regard to the heat exchanger plate (1) to in the proximity of the

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secondary edge zone (12a) with regard to the first heat exchanger plate (1).

16. A plate package according to claim 15, characterised in that
5 the height of the plate interspace (40) decreases continuously.
17. A plate package according to any one of claims 14 to 16,
characterised in that the distribution area (26) includes a
10 number of projections (31) and depressions (32), wherein
substantially each projection (31) extends in a respective
direction running from the primary porthole (21) towards the
central heat transfer area (18).
18. A plate package according to claim 17, characterised in that
15 substantially each projection (31) reaches the upper plate plane
(14) and that substantially each depression (32) reaches the
lower plate plane (15).
19. A plate package according to any one of claims 17 and 18,
20 characterised in that substantially each projection (31) has a
length which is substantially shorter than the distance from the
primary porthole (21) to the central heat transfer area (18) along
the direction of the projection (31).
20. A plate package according to any one of claims 17 to 19,
characterised in that substantially each depression (32) extends
substantially perpendicularly to said respective direction of an
adjacent projection (31).
21. A plate package according to any one of claims 17 to 20,
characterised in that substantially each depression (32) extends
in a respective direction running from the secondary porthole
(23) towards the central heat transfer area (18).
22. A plate package according to any one of claims 20 and 21,
characterised in that substantially each depression (32) has a

- length which is substantially shorter than the distance from the primary porthole (21) to the central heat transfer area (18) along the direction of the depression (32).
- 5 23. A plate package according to any one of claims 17 to 22, characterised in that each projection (31) and each depression (32) have two ends and two long sides, wherein substantially each projection (31), which is located on the secondary part (12), with one of the ends extends to one of the long sides of a depression (32) and wherein substantially each depression (32), which is located on the primary part (11), with one of the ends extends to one of the long sides of a projection (31).
- 10 24. A plate package according to any one of claims 17 to 23, characterised in that the heat exchanger plates (1) are arranged in an alternating order in such way that the primary part (11) in the first end area (16) of a first heat exchanger plate (1) adjoins the secondary part (12) of an adjacent second heat exchanger plate (1), wherein substantially each depression (32) of the first heat exchanger plate (1) abuts a projection (31) of the adjacent second heat exchanger plate (1).
- 15 25. A plate package according of any one of claims 14 to 24, characterised in that substantially all heat exchanger plates (1) are identical.
- 20 26. A plate package according to any one of claims 14 to 25, characterised in that the heat exchanger plates (1) are permanently joined to each other.